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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,214	07/08/2003	Nelik I. Dreiman	TEC1194	8064

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FORT WAYNE, IN 46802

EXAMINER
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SAYOC, EMMANUEL

ART UNIT	PAPER NUMBER
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3746

DATE MAILED: 07/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/615,214

Applicant(s)

DREIMAN ET AL.

Examiner

Emmanuel Sayoc

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,8-14,17,19 and 21-26 is/are rejected.
- 7) ☒ Claim(s) 3-7,15,16,18 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/8/03</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 10, 12-14, 17, 19, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gannaway (U.S. 6,171,076) and Dashner (U.S. 4,172,465).

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In Figure 1, Gannaway teaches a compressor assembly comprising a compressor mechanism having a block (76), a compression chamber (98), and a discharge chamber (32, 36). The block (76) at least partially defines the compression chamber (98), and a discharge port (190) is disposed in the block (76) providing fluid communication between the compression chamber (98) and said discharge chamber (32, 36). A valve seat surface (192) is formed on the block (76) circumscribing the discharge port (190), and a discharge valve member (158, 194, 196) has a valve head (194), a biasing section (spring 196), and a valve support (158). The valve head (194) and the support (158) are portions of a single integrally formed part. The valve head (194) is sealingly engageable with the valve seat surface (192). The biasing section (spring 196) biases the valve head (194) toward the valve seat surface (192).

The Gannaway device differs from the claimed invention in that there is no teaching of the valve support having a valve support opening extending therein, and an elongate non-threaded coupling member having a first end and an opposite second end, and the end being mounted in the block and the elongate coupling member extends through the valve support opening thereby securing said discharge valve member to the block.

Dashner in Figures 1 and 2 teach a check valve usable in a compressor, having a valve head (38), a biasing section (46) and a valve support (5, 32). The biasing section (Dashner 46) biases the valve head in a longitudinal direction toward said valve seat surface (192) and the valve head has a first surface having a substantially convex shape (see Gannaway Figure 4 and Dashner

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Figure 1) and being sealingly engageable with said valve seat surface (Gannaway 192). A guide member (Dashner 40) extends in a longitudinal direction engageable with a biasing section (Gannaway spring 196) wherein engagement of the guide member (Dashner 40) and biasing section (Dashner 46) limits lateral movement of said valve head (Dashner 38) to lateral positions. The valve head (Dashner 38) is sealingly engageable with the valve seat surface (Dashner 20). The guide member (Dashner 40) is spaced from the valve head (Dashner 38) when the valve head (Dashner 38) is sealingly engaged with the valve seat surface (Dashner 20). As stated in column 2 lines 40-69, the check valve arrangement reduces pressure loss in the fluid as the fluid passes the check valve. Therefore it would have been obvious to one of ordinary skill in the art at time the invention was made to modify the Gannaway device by, incorporating the check valve, as taught by Dashner, as a discharge check valve in order to advantageously reduce pressure loss in the fluid as the fluid passes the check valve for added compressor efficiency.

The valve seat surface (Dashner 20) has a substantially concave shape. The first surface (Dashner 38) and the valve seat surface (Dashner 20) are each substantially shaped to define a portion of a sphere both having a substantially equivalent radius.

The biasing section (Dashner 46) circumscribes the guide member (Dashner 40) and is engageable with a radially inner surface of said biasing section (Dashner 46).

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Further in the combination, the valve head (Dashner 38) has a second surface (inner flat surface 42) disposed opposite said first surface and facing said guide member (Dashner 40). The guide member (Dashner 40) includes at least one longitudinally extending passageway (44) in fluid communication with the discharge chamber (Gannaway 36) and extending to a distal end of said guide member (Dashner 40) proximate the valve head (Dashner 38).

With respect to the exact maximum pressure differential between the compression chamber and the discharge chamber being at least about 500 psi., where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Swain et al., 33 CCPA (Patents) 1250, 156 F.2d 239, 70 USPQ 412; Minnesota Mining and Mfg. Co. v. Coe, 69 App. D.C. 217, 99 F.2d 986, 38 USPQ 213; Allen et al. v. Coe, 77 App. D.C. 324, 135 F.2d 11, 57 USPQ 136.

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gannaway, and modified by Dashner, as applied to claim 10, and in further view of Lyford (U.S. 1,886,205).

Gannaway, as modified by Dashner set forth a device as described above, which is substantially analogous to the claimed invention. The Gannaway valve head (194) and the support (158) are portions of a single integrally formed part. The Gannaway, as modified by Dashner, device differs from the claimed

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invention in that there is no teaching of the biasing section being a portion of a single integrally formed part consisting of the valve head and the valve support. Integration to eliminate parts of an assembly was a well-known design concept at the time the invention was made. Lyford teaches this concept in Figure 6 with an integrated valve head (11) and biasing section (5) – see also the explicit teaching in column 1 lines 1- 8. Therefore it would have been obvious to one of ordinary skill in the art at time the invention was made to further modify the Gannaway, as modified by Dashner, device by incorporating the integrated spring and valve head, as taught by Lyford, in order to advantageously eliminate parts and simplify device assembly.

5. Claims 1, 2, 8, 9, and 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gannaway, Dashner, and Lyford (U.S. 1,886,205).

In Figure 1, Gannaway teaches a compressor assembly comprising a compressor mechanism having a block (76), a compression chamber (98), and a discharge chamber (32, 36). The block (76) at least partially defines the compression chamber (98), and a discharge port (190) is disposed in the block (76) providing fluid communication between the compression chamber (98) and said discharge chamber (32, 36). A valve seat surface (192) is formed on the block (76) circumscribing the discharge port (190), and a discharge valve member (158, 194, 196) has a valve head (194), a biasing section (spring 196), and a valve support (158). The valve head (194) and the support (158) are

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portions of a single integrally formed part. The valve head (194) is sealingly engageable with the valve seat surface (192). The biasing section (spring 196) biases the valve head (194) toward the valve seat surface (192).

The Gannaway device differs from the claimed invention in that there is no teaching of the valve support having a valve support opening extending therein, and an elongate non-threaded coupling member having a first end and an opposite second end, and the end being mounted in the block and the elongate coupling member extends through the valve support opening thereby securing said discharge valve member to the block.

Dashner in Figures 1 and 2 teach a check valve usable in a compressor, with a valve support (40) having a valve support opening extending therein (44), and an elongate non-threaded coupling member (5) having a first end and an opposite second end, and the elongate coupling member (5) extends through the valve support (40) opening thereby securing said discharge valve member to the block. As stated in column 2 lines 40-69, the check valve arrangement reduces pressure loss in the fluid as the fluid passes the check valve. Therefore it would have been obvious to one of ordinary skill in the art at time the invention was made to modify the Gannaway device by, incorporating the check valve, as taught by Dashner, as a discharge check valve in order to advantageously reduce pressure loss in the fluid as the fluid passes the check valve for added compressor efficiency. In the combination, the check valve is mounted to the Gannaway block (76) particularly in the passage (192). Therefore the end of the coupling member (Dashner 5) is also mounted in the block (76).



The Gannaway, as modified by Dashner, device differs from the claimed invention in that there is no teaching of the biasing section being a portion of a single integrally formed part consisting of the valve head and the valve support. Integration to eliminate parts of an assembly was a well-known design concept at the time the invention was made. Lyford teaches this concept in Figure 6 with an integrated valve head (11) and biasing section (5) – see also the explicit teaching in column 1 lines 1- 8. Therefore it would have been obvious to one of ordinary skill in the art at time the invention was made to further modify the Gannaway, as modified by Dashner, device by incorporating the integrated spring and valve head, as taught by Lyford, in order to advantageously eliminate parts and simplify device assembly.

In the combination, the valve head (Dashner 38) has a second surface (42) exposed to fluid within the discharge chamber (Gannaway 32, 36) and extending radially outwardly of the discharge port (Gannaway 190). In a plane oriented perpendicular to the longitudinal direction, the second surface (Dashner 42) defines an effective area greater than the discharge port (Gannaway 190) area.

The valve seat surface (Dashner 20) has a substantially concave shape. The first surface (Dashner 38) and the valve seat surface (Dashner 20) are each substantially shaped to define a portion of a sphere both having a substantially equivalent radius.

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In the combination above, the coupling member (Dashner 5) extends through said valve support (Dashner 40) and the second end is mounted in the block (76, both ends would be in the block).

With respect to the exact maximum pressure differential between the compression chamber and the discharge chamber being at least about 500 psi., where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Swain et al., 33 CCPA (Patents) 1250, 156 F.2d 239, 70 USPQ 412; Minnesota Mining and Mfg. Co. v. Coe, 69 App. D.C. 217, 99 F.2d 986, 38 USPQ 213; Allen et al. v. Coe, 77 App. D.C. 324, 135 F.2d 11, 57 USPQ 136.

In the combination, the Gannaway compression chamber (98) is a cylindrical chamber defined within the block (76), and the compressor mechanism is a rotary compressor (rotary vane compressor) mechanism. The block (76) defines a discharge passage (Gannaway 192) in fluid communication with the discharge port (Gannaway 190) and forms a portion of said discharge chamber (36). The valve discharge member (Dashner 38) is mounted within the discharge passage (Gannaway 192), and the valve support (Dashner 40) has an outer surface (shown not enumerated), a portion of the outer surface (tip of 40) engages the discharge passage (Gannaway 192, support extends within the passage) and a portion of the outer surface is spaced from the discharge passage (Gannaway 192) to define a fluid passage therebetween.

***Allowable Subject Matter***

6. Claims 3-7, 15, 16, 18, and 20 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references are cited to further show the state of the art with respect to compressor discharge valves.

U.S. Pat. 5,022,146 to Gannaway et al., 5,326,233 to Muchizuki et al., and 5,328,344 to Sato et al. – teaches a similar compressor to the claimed invention.

U.S. Pat. 5,183,075, to Stein, 5,207,242 to Daghe et al., and 2,011,547 to Campbell – teach similar check valves to the claimed invention.

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**Contact Information**

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel Sayoc whose telephone number is (571) 272 4832. The examiner can normally be reached on M-F 8-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy S. Thorpe can be reached on (571) 272-4444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Emmanuel Sayoc  
Examiner  
Art Unit 3746

ECS



Timothy S. Thorpe  
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